RF Power MOSFET Transistor
200 W, 2 - 175 MHz, 28 V

Features
- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- High saturated output power
- Lower noise figure than bipolar devices
- RoHS Compliant

ABSOLUTE MAXIMUM RATINGS AT 25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Voltage</td>
<td>V_DS</td>
<td>65</td>
<td>V</td>
</tr>
<tr>
<td>Gate-Source Voltage</td>
<td>V_GS</td>
<td>20</td>
<td>V</td>
</tr>
<tr>
<td>Drain-Source Current</td>
<td>I_DS</td>
<td>20</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>P_D</td>
<td>389</td>
<td>W</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>T_J</td>
<td>200</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>T_STG</td>
<td>-65 to +150</td>
<td>°C</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>θ_JC</td>
<td>0.45</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

TYPICAL DEVICE IMPEDANCE

<table>
<thead>
<tr>
<th>F (MHz)</th>
<th>Z_IN (Ω)</th>
<th>Z_LOAD (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>2.7 - j4.8</td>
<td>7.2 - j1.9</td>
</tr>
<tr>
<td>100</td>
<td>1.6 - j3.0</td>
<td>5.25 - j1.4</td>
</tr>
<tr>
<td>150</td>
<td>1.5 - j2.0</td>
<td>5.0 - j0.7</td>
</tr>
<tr>
<td>175</td>
<td>1.6 - j1.0</td>
<td>5.2 - j0.6</td>
</tr>
<tr>
<td>200</td>
<td>1.8 - j0.5</td>
<td>5.5 - j0.5</td>
</tr>
</tbody>
</table>

V_DD = 28V, I_DQ = 1000mA, P_OUT = 200 W

Z_IN is the series equivalent input impedance of the device from gate to source.

Z_LOAD is the optimum series equivalent load impedance as measured from drain to ground.

ELECTRICAL CHARACTERISTICS AT 25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Max</th>
<th>Units</th>
<th>Test Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain-Source Breakdown Voltage</td>
<td>BV_DSS</td>
<td>65</td>
<td>-</td>
<td>V</td>
<td>V_GS = 0.0 V, I_DSS = 25.0 mA</td>
</tr>
<tr>
<td>Drain-Source Leakage Current</td>
<td>I_GSS</td>
<td>-</td>
<td>5.0</td>
<td>mA</td>
<td>V_GS = 28.0 V, V_GS = 0.0 V</td>
</tr>
<tr>
<td>Gate-Source Leakage Current</td>
<td>I_GSS</td>
<td>-</td>
<td>5.0</td>
<td>μA</td>
<td>V_GS = 20.0 V, V_GS = 0.0 V</td>
</tr>
<tr>
<td>Gate Threshold Voltage</td>
<td>V_GS(TH)</td>
<td>2.0</td>
<td>6.0</td>
<td>V</td>
<td>V_GS = 10.0 V, I_DSS = 500 mA</td>
</tr>
<tr>
<td>Forward Transconductance</td>
<td>G_m</td>
<td>2.5</td>
<td>-</td>
<td>S</td>
<td>V_GS = 10.0 V, I_DSS = 5.0 A, Δ V_GS = 1.0 V, 80 μs Pulse</td>
</tr>
<tr>
<td>Input Capacitance</td>
<td>C_GS</td>
<td>-</td>
<td>225</td>
<td>pF</td>
<td>V_GS = 28.0 V, F = 1.0 MHz</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>C_GS</td>
<td>-</td>
<td>200</td>
<td>pF</td>
<td>V_GS = 28.0 V, F = 1.0 MHz</td>
</tr>
<tr>
<td>Reverse Capacitance</td>
<td>C_R</td>
<td>-</td>
<td>40</td>
<td>pF</td>
<td>V_GS = 28.0 V, F = 1.0 MHz</td>
</tr>
<tr>
<td>Power Gain</td>
<td>G_P</td>
<td>13</td>
<td>-</td>
<td>dB</td>
<td>V_GS = 28.0 V, I_DSS = 1000 mA, P_OUT = 200.0 W F = 175 MHz</td>
</tr>
<tr>
<td>Drain Efficiency</td>
<td>η_D</td>
<td>55</td>
<td>-</td>
<td>%</td>
<td>V_GS = 28.0 V, I_DSS = 1000 mA, P_OUT = 200.0 W F = 175 MHz</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>S_VSWR</td>
<td>10:1</td>
<td>-</td>
<td></td>
<td>V_GS = 28.0 V, I_DSS = 1000 mA, P_OUT = 200.0 W F = 175 MHz</td>
</tr>
</tbody>
</table>
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Typical Broadband Performance Curves

**GAIN vs FREQUENCY**
V<sub>DD</sub>=28 V I<sub>DQ</sub>=100 mA P<sub>OUT</sub>=200 W

**EFFICIENCY vs FREQUENCY**
V<sub>DD</sub>=28 V I<sub>DQ</sub>=100 mA P<sub>OUT</sub>=200 W

**POWER OUTPUT vs POWER INPUT**
V<sub>DD</sub>=28 V I<sub>DQ</sub>=600 mA

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